

Name:	الاسم:	Score
Program Name:	اسم البرنامج	

الإجابة في نفس ورقة الأسئلة وإجابة كل سؤال في المكان المخصص له فقط

- 1- How much heat is required to convert 350 g of ice at -9°C to water at 35°C ? Take the specific heat for ice is $2100 \text{ J/Kg}^{\circ}\text{C}$, the specific heat for water is $4186 \text{ J/Kg}^{\circ}\text{C}$ and the latent heat of fusion for ice is $3.337 \times 10^5 \text{ J/Kg}$. [4 points]

- 2- A constant-volume gas thermometer registers an absolute pressure of 90 mm Hg at the triple point of water. Calculate the temperature when the pressure reads 35 mm Hg. [3 points]

- 3- A steel wire is heated to 55°C and fixed between two rigid supports. It is then cooled after that to 35°C . (i) What is type of stress developed in the wire? (ii) Calculate the magnitude of stress developed in the wire. The thermal expansion coefficient for steel is $12 \times 10^{-6} \text{ }^{\circ}\text{C}^{-1}$ and Young's modulus is $2 \times 10^{11} \text{ Pa}$. [3 points]

4- The speed of a particle varies in time according to $v = A t^2 - B t^{-1}$. What are the dimensions of the constants A and B? [3 points]

5- A steel wire of length 100 cm and cross sectional area 1 mm^2 is pulled by a tension of 150 N. Calculate the elongation of the wire. The Young's modulus for steel is $2 \times 10^{11} \text{ Pa}$. [3 points]

6- The position in meters of a particle moving along x-axis is given by $x = 0.08 \sin(8t + 0.3)$, where x is in meters and t is in seconds. (a) What is the period of the motion? (b) Calculate the maximum velocity. (c) Calculate the acceleration of the particle at $t = 0.3 \text{ s}$. [4 points]

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- 1- How much heat is required to convert 150 g of ice at -5°C to water at 15°C ? Take the specific heat for ice is $2100 \text{ J/Kg}^{\circ}\text{C}$, the specific heat for water is $4186 \text{ J/Kg}^{\circ}\text{C}$ and the latent heat of fusion for ice is $3.337 \times 10^5 \text{ J/Kg}$. [4 points]

- 2- A constant-volume gas thermometer registers an absolute pressure of 50 mm Hg at the triple point of water. Calculate the temperature when the pressure reads 25 mm Hg. [3 points]

- 3- A steel wire is heated to 35°C and fixed between two rigid supports. It is then cooled after that to 5°C . (i) What is type of stress developed in the wire? (ii) Calculate the magnitude of stress developed in the wire. The thermal expansion coefficient for steel is $12 \times 10^{-6} ^{\circ}\text{C}^{-1}$ and Young's modulus is $2 \times 10^{11} \text{ Pa}$. [3 points]

4- The speed of a particle varies in time according to $v = A t - B t^{-3}$. What are the dimensions of the constants A and B? [3 points]

5- A steel wire of length 100 cm and cross sectional area 1 mm^2 is pulled by a tension of 120 N. Calculate the elongation of the wire. The Young's modulus for steel is $2 \times 10^{11} \text{ Pa}$. [3 points]

6- The position in meters of a particle moving along x-axis is given by $x = 0.06 \sin (6 t + 0.3)$, where x is in meters and t is in seconds. (a) What is the period of the motion? (b) Calculate the maximum velocity. (c) Calculate the acceleration of the particle at $t = 0.3 \text{ s}$. [4 points]

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الإجابة في نفس ورقة الأسئلة وإجابة كل سؤال في المكان المخصص له فقط

- 1- How much heat is required to convert 250 g of ice at -7°C to water at 25°C ? Take the specific heat for ice is $2100 \text{ J/Kg}^{\circ}\text{C}$, the specific heat for water is $4186 \text{ J/Kg}^{\circ}\text{C}$ and the latent heat of fusion for ice is $3.337 \times 10^5 \text{ J/Kg}$. [4 points]

- 2- A constant-volume gas thermometer registers an absolute pressure of 70 mm Hg at the triple point of water. Calculate the temperature when the pressure reads 15 mm Hg. [3 points]

- 3- A steel wire is heated to 45°C and fixed between two rigid supports. It is then cooled after that to 10°C . (i) What is type of stress developed in the wire? (ii) Calculate the magnitude of stress developed in the wire. The thermal expansion coefficient for steel is $12 \times 10^{-6} ^{\circ}\text{C}^{-1}$ and Young's modulus is $2 \times 10^{11} \text{ Pa}$. [3 points]

- 4- The speed of a particle varies in time according to $v = A t^3 - B t^{-2}$. What are the dimensions of the constants A and B? [3 points]

- 5- A steel wire of length 100 cm and cross sectional area 1 mm^2 is pulled by a tension of 140 N. Calculate the elongation of the wire. The Young's modulus for steel is $2 \times 10^{11} \text{ Pa}$. [3 points]

- 6- The position in meters of a particle moving along x-axis is given by $x = 0.07 \sin (7 t + 0.3)$, where x is in meters and t is in seconds. (a) What is the period of the motion? (b) Calculate the maximum velocity. (c) Calculate the acceleration of the particle at $t = 0.3 \text{ s}$. [4 points]